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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/061,546	02/01/2002	Xiao-Peng Sun	017829-000710US	3449

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EXAMINER

NORRIS, JEREMY C

ART UNIT	PAPER NUMBER
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2827

DATE MAILED: 12/18/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/061,546

Applicant(s)

SUN ET AL.

Examiner

Jeremy C. Norris

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 April 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,7-11 and 17-20 is/are rejected.
- 7) ☒ Claim(s) 2-6 and 12-16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 April 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____. 6) ☐ Other: _____

DETAILED ACTION

Drawings

The corrected or substitute drawings were received on 9 April 2002. These drawings are not approved. The drawings are objected to because the sectional views are not properly cross-hatched (see MPEP 608.02). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 9, 11, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,392,160, granted to Andry et al (hereafter Andry) in view of US 6,407,930, granted to Hsu (hereafter Hsu).

Andry discloses, referring to figures 1A, 3A, and 3B, multi-layer microwave interconnect module having a top surface and a bottom surface and comprising: four metal layers separated by a plurality of dielectric layers including a top signal layer (20T-1) on the top surface, a bottom metal layer (49) on the bottom surface, an internal ground layer (GND), and an internal signal layer (20T-2), the top signal layer providing contacts for electrical components (22-1, 23) mounted on the module, the internal signal layer providing a metal trace for cooperating with the internal ground layer as a microstrip, and the bottom metal layer providing a bottom ground plane, and conductive vias (39, 73) selectively connecting at least one contact in the top signal layer to the bottom ground plane, and contacts in the top signal layer to the metal trace in the internal signal layer, the conductive vias extending from the top surface to the bottom surface for ease in fabrication, the internal ground layer having a metal pattern devoid of metal at a location of a via not connected to the ground layer. Andry does not specifically disclose at least one input/output contact on the bottom ground plane [claims 1, 11]. However, Hsu teaches (referring to figure 3) a multilayer PCB having a bottom ground plane (48) with I/O contacts (32, 33). Therefore, it would have been obvious, to one having ordinary skill in the art, at the time of invention, to include contacts on the ground plane of Andry as taught by Hsu. The motivation for doing so

would have been to allow the invention to Andry to be connected to another board and thus be more flexible in usage.

Additionally, the modified invention of Andry discloses that wherein the metal layer comprises copper (see col. 3, lines 1-5) [claims 9, 19].

Claim Rejections - 35 USC § 103

Claims 10 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andry in view of Hsu as applied to claims 1 and 11 above, and further in view of Us 6,011,693, granted to Gore (hereafter Gore).

Andry as modified by Hsu discloses the claimed invention as described above with respect to claims 1 and 11, except for the limitation that the metal layer must comprise gold plated refractory metal. However, the modified invention of Andry teaches that the layers could be formed of any known electrically conductive material (Andry col. 3, lines 1-5). It is well known in the art to use gold plated refractory metal for conductive traces because of its high electrical conductivity as evidenced by Gore (see col. 6, lines 5-10). Moreover, it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Claims 7, 8, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andry in view of Hsu as applied to claims 1 and 11 above, and further in view of US 6,054,652, granted to Moriizumi et al. (hereafter Morrizumi).

Andry as modified by Hsu discloses the claimed invention as described above with respect to claims 1 and 11, except for the limitation that the dielectric layer

comprise alumina [claims 7, 17] or be selected from the group consisting of FR4, Getek and BT [claims 8, 18]. However, it would have been obvious, to one having ordinary skill in the art, at the time of invention, to select alumina or FR4 as the dielectric material as it is well known in the art to use these materials to form a dielectric substrate in a PCB as evidenced by Moriizumi (see col. 5, lines 5-15). Moreover, it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416.

Allowable Subject Matter

Claims 2-6 and 12-16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Claims 2 and 12 state the limitation "further including a solder mask overlying the bottom surface and the conductive vias selectively interconnecting contacts in the top surface to the metal trace in the internal signal layer". This limitation, in conjunction with the other claimed limitations was neither found to be disclosed in, nor suggested by the prior art.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US 5,408,053 Young,

US 5,578,796	Bhatt et al.,
US 6,208,032	Yasuda et al.,
US 6,329,604	Koya,
US 6,351,389	Malladi.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeremy C. Norris whose telephone number is 703-306-5737. The examiner can normally be reached on Mon.-Th., 9AM - 6:30 PM and alt. Fri. 9AM-5:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on 703-305-9883. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-0725 for regular communications and 703-308-0725 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

JCSN
December 14, 2002


DAVID L. TALBOTT
SUPERVISORY PATENT EXAMINER
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